



Image AF/177  
67,064-001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Jyawook, et al.  
Serial No.: 10/077,427  
Filed: 02/15/2002  
Group Art Unit: 1771  
Examiner: Vo, Hai  
Title: THERMOPLASTIC VEHICLE WEATHER STRIPPING

**APPEAL BRIEF**

Box AF  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

The Notice of Appeal in this application was filed on February 2, 2004. Appellant now submits its brief in the above-referenced application. A check in the amount of \$165.00 is enclosed. The Commissioner is authorized to charge Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds for any additional fees or credit the account for any overpayment.

**Real Party in Interest**

JYCO Sealing Technologies is the real party in interest.

**Related Appeals and Interferences**

There are no related appeals or interferences.

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**Status of the Claims**

Claims 1-7 and 15-20 stand rejected under 35 U.S.C. §103.

**Status of Amendments**

There are no unentered amendments. Applicant submitted a further Request for Reconsideration subsequent to filing the Notice of Appeal. Applicant has submitted recently available evidence of commercial success. At the time of filing this brief, the Examiner apparently has not yet had an opportunity to comment on that evidence or to decide whether it would rebut what the Examiner considers to be a *prima facie* case of obviousness. Even if there were a *prima facie* case (which there is not as discussed below), the evidence of commercial success submitted by Applicant is sufficient to rebut any such *prima facie* case and all claims are allowable.

**Summary of the Invention**

Seals for sealing off interfaces between different portions of vehicle bodies are known. Conventional weather stripping for such seals is made from rubber. The drawbacks associated with rubber or proposals to blend rubber with other materials leave a need for an improved weather stripping seal.

A disclosed embodiment of this invention is a weather stripping comprising a thermoplastic material having a microcellular composition. In one particular example, a thermoplastic vulcanizate (TPV) is used. The microcellular structure of one disclosed example includes a cell density in the range from about  $10^9$  to about  $10^{15}$  per cubic centimeter with average cell sizes between .1 micron and about 1.0 micron (Paragraphs 8-10, page 2).

The inventive weather stripping provides a superior product that is lighter in weight, stronger and less expensive than prior designs. Additionally, the inventive arrangement provides a better seal that reduces wind noise at interface locations such as door closures. (Paragraph 11, page 2).

The microcellular structure results from using a supercritical fluid during the process of making the weather stripping. In one example, the resulting structure is closed cell. The microcellular structure provides a better seal compared to previous designs because there is an increased contact area provided by the inventive weather stripping. (Paragraph 20, pages 3-4).

Independent claim 1 recites, “A weather stripping for use in sealing an interface between selected portions of a vehicle, comprising: a body portion that is adapted to be supported on a selected one of the vehicle portions; and a sealing portion extending at least partially away from the body portion, the sealing portion and the body portion comprising the same thermoplastic material having a microcellular structure.”

Independent claim 15 recites a weather stripping made by the process including, “melting a thermoplastic material; introducing a supercritical fluid into the melted thermoplastic material; forming a microcellular structure in the thermoplastic material using the super critical fluid; and forming the entire weather stripping from the thermoplastic material having the microcellular structure.”

The various dependent claims add further limitations.

### **Issues**

Whether the final rejection under 35 U.S.C. §103 is proper when the proposed combination cannot provide a workable result and, therefore, there is no motivation for making the combination.

### **Grouping of Claims**

All rejected claims are on appeal. Claims 1-7 and 15-20 stand or fall together for purposes of this appeal.

### **Argument**

#### **INTRODUCTION**

There is no *prima facie* case of obviousness because there is no motivation for making the Examiner's proposed combination. The references the Examiner proposes to combine do not provide a workable result. Accordingly, there is no motivation for the combination and none of the claims can be considered obvious.<sup>1</sup>

#### **THE CITED REFERENCES**

##### **A. United States Patent No. 6,458,301 ("the *Hendrix* reference")**

The *Hendrix* reference discloses a unique die arrangement that forms a first part of a weather seal using a first die and a second part of the seal using a second die. The *Hendrix* reference requires forming a primary extrudate using the first die and then forming a secondary extrudate using the second die that is bonded to the primary extrudate using a heat bond. (Column 8, line 63 - column 9, line 2). The *Hendrix* reference specifically requires applying heat to the primary extrudate *after* it is formed. Heating the primary extrudate after it is shaped is required to

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<sup>1</sup> Even if there were a *prima facie* case of obviousness, Applicant's evidence of commercial success is a sufficient rebuttal. As of the time for filing this brief, Applicant is not aware of whether the Examiner has considered that evidence. To the extent it may become necessary, Applicant expressly reserves the right to argue the sufficiency of that evidence in reply to any answer filed by the Examiner in this case.

bond the secondary extrudate to the primary extrudate. Without the heating and bonding, the resultant weather seal would not perform its intended function.

The fact that the *Hendrix* reference requires heating the primary extrudate becomes important when considering the Examiner's proposed substitution of a microcellular material into the arrangement of the *Hendrix* reference. The impossibility for making that substitution is described below.

**B. United States Patent No. 6,602,064 ("the *Chen, et al.* reference")**

The Examiner cites the *Chen, et al.* reference as teaching a microcellular material and proposes to use that material in the arrangement of the *Hendrix* reference. It is important to note that the *Chen, et al.* reference relies upon the international publication WO 98/08667 of *Burnham, et al.* for teaching the preferred type of dies used in microcellular processing and for teaching the type of microcellular materials that can be produced by the extruder of the *Chen, et al.* reference. (See, e.g., column 6, lines 63-67 and column 7, lines 11-14).

While the WO 98/08667 document is not officially of record in this application, United States Patent No. 6,284,810 issued to *Burnham, et al.* on September 4, 2001, is of record. That document corresponds to the WO 98/08667 document incorporated by reference into the *Chen, et al.* reference. The *Burnham, et al.* patent discloses cooling an extruded product as it exits a die to control the formation of cells in a microcellular material. For example, column 15, line 65 - column 16, line 9 of the *Burnham, et al.* '810 patent provides:

Also illustrated in FIG. 1 is an optional shaping element 69 downstream of shaping die 68. Shaping element 69 can provide further control over the thickness or shape of an extruded product by restricting expansion, **further cooling** the extrudate (via, for example, fluid cooling channels or other temperature control units in element 69, not shown), or a combination. Without element 69, extrudate is extruded into **ambient conditions** upon emergence from shaping die 68 (restricted only by polymeric extrudate downstream of the exit of the shaping die). With element 69,

the extrudate generally emerges from shaping die 68 into conditions of pressure slightly above ambient. (Emphasis added.)

Other references of record in this application contain the same or similar teachings. For example, U.S. Patent No. 6,051,174 requires in claim 1, “releasing the shaped microcellular extrudate into ambient conditions essentially immediately after shaping.”

U.S. Patent No. 6,231,942, at column 10, lines 13-24 teaches the same optional shaping element 69 as discussed above in the *Burnham, et al.* patent.

U.S. Patent No. 5,158,986 issued to *Cha, et al.* teaches at column 5, lines 50-57:

The material is moved therefrom so that the pressure and temperature thereof rapidly assumes ambient room conditions...such rapid changes in temperature/pressure conditions induce a thermal dynamic instability so that foaming (cellular nucleation and cell expansion) takes place within the material).

Later in column 6, at lines 8-14, the *Cha, et al.* patent further teaches, “when removed to room temperature and pressure conditions, the fluid/polymer system was found to foam in about one or two minutes, thereby producing a super microcellular foamed PETG material.”

U.S. Patent No. 5,160,674 issued to *Colton, et al.* teaches forming a microcellular material by having a polymer exit a die, “at which point foaming begins due to the reduced pressure on the polymer shape. The material may then be quenched with cold water or other fluids to stop the foaming process.” (Column 3, lines 31-34).

U.S. Patent No. 4,473,665 teaches at column 2, lines 67 - column 3, line 10, “In our invention, cell growth is carefully controlled by processing the plastic under pressure, maintaining the pressure while cooling to a “glass transition” temperature and then quickly cooling to maintain the microcellular structure.”

The *Chen, et al.* reference teaches at column 8, lines 12-13 that, “the product extruded uniformly from the die exit and was observed to foam upon exit from the die.” According to the

art, the *Chen, et al.* reference therefore teaches a microcellular material resulting from allowing the material to cool as it exits the die. This technique appears to be required for forming a microcellular material of the type discussed in the *Chen, et al.* or *Burnham, et al.* patent. It is clear from the *Chen, et al.* reference and the art of record in this application that making a microcellular material requires allowing the material to cool at room temperature or to be cooled at an even lower temperature as the material exits the die.

### **THE REJECTION UNDER 35 U.S.C. §103 IS IMPROPER**

The Examiner proposes to combine the *Hendrix* reference with the *Chen, et al.* reference. It is the Examiner's contention that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the cellular foamed material in *Hendrix* by a microcellular foamed material as taught in *Chen* motivated by the desire to provide the foam having improved properties and appearance."

The problem with the Examiner's proposed combination is that it does not provide a workable result and, therefore, there is no *prima facie* case of obviousness.

As discussed above, the *Hendrix* reference requires heating the primary extrudate after it exits the die in order to then secure the secondary extrudate to the primary extrudate, which process is required for forming the weather seal of the *Hendrix* arrangement. If one were to attempt to use a microcellular material within the *Hendrix* arrangement, the material would not work. It is not possible to form a microcellular material when heating the extruded material after it exits the die. This is directly contrary to the teachings of *Chen, et al.* and all of the references mentioned above. In other words, if one used the arrangement of the *Hendrix* reference with the extruder of the *Chen, et al.* reference, the resulting product would not have a microcellular structure. Cooling the

extrudate as it exits the die is required to form the microcellular structure. Because *Hendrix* heats the extrudate as it exits the die, it would be impossible to form the microcellular structure.

Because *Hendrix* and *Chen, et al.* require opposite approaches, they cannot be combined and there is no *prima facie* case of obviousness. The *Hendrix* reference is not compatible with a microcellular material.

Where a proposed combination does not provide a workable result, there is no motivation for making that combination and no *prima facie* case of obviousness. The Examiner's proposal is directly contrary to the requirements of the secondary reference, and therefore, the combination cannot be made.

Because the Examiner's proposed combination cannot be made, none of the claims can be considered obvious.

Further, the results provided by the improper combination (if they would work at all) would not be the same as the claimed invention. The heating step required by the *Hendrix* reference would either prevent microcell formation or ruin the extrudate, entirely.

#### **CLAIMS 1-7 AND 15-20 ARE ALLOWABLE**

As described above, the Examiner has failed to establish a *prima facie* case of obviousness. It follows, necessarily, that none of the claims can be considered obvious. Without a sufficient motivation for making the combination, there is no *prima facie* case of obviousness. In this instance, the proposed combination does not provide a workable result and, therefore, there is no motivation. The proposed combination simply will not work and, therefore, cannot be held against Applicant's claims and cannot render any of them obvious.

Even if the combination could be made, the result would not be the same as the claimed invention.

**CONCLUSION**

There is no *prima facie* case of obviousness and all claims are allowable.

Respectfully solicited,

**CARLSON, GASKEY & OLDS, P.C.**

April 2, 2004

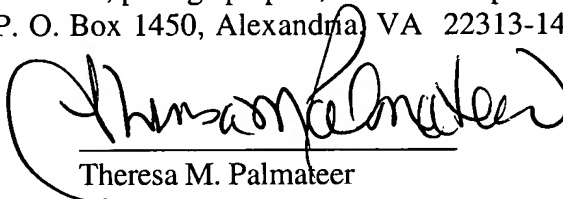
Date



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**CERTIFICATE OF MAIL**

I hereby certify that the enclosed **Appeal Brief and Fees** are being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Mail Stop AF, Commissioner For Patents, P. O. Box 1450, Alexandria, VA 22313-1450 on April 2, 2004.

  
Theresa M. Palmateer

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**APPENDIX OF CLAIMS**

1. A weather stripping for use in sealing an interface between selected portions of a vehicle, comprising:

a body portion that is adapted to be supported on a selected one of the vehicle portions;

and

a sealing portion extending at least partially away from the body portion, the sealing portion and the body portion comprising the same thermoplastic material having a microcellular structure.

2. The weather stripping of claim 1, wherein the thermoplastic material comprises thermoplastic vulcanizate.

3. The weather stripping of claim 2, wherein at least the thermoplastic material of the sealing portion is foamed.

4. The weather stripping of claim 1, wherein the microcellular structure includes cells having a size less than about 2 microns.

5. The weather stripping of claim 4, wherein the microcellular structure includes cells having a size between about .1 micron and about 1.0 micron.

6. The weather stripping of claim 1, wherein the thermoplastic material has a microcellular structure with a cell density in the range from about  $10^9$  to about  $10^{15}$  per cubic centimeter.

7. The weather stripping of claim 1, wherein at least one of the body portion or the sealing portion has a cross sectional dimension that selectively varies along a length of the weather stripping.

15. A weather stripping for use in sealing an interface between selected portions of a vehicle, the weather stripping having a body portion that is adapted to be supported on a selected one of the vehicle portions and a sealing portion extending at least partially away from the body portion, made by the process comprising the steps of:

melting a thermoplastic material;

introducing a supercritical fluid into the melted thermoplastic material;

forming a microcellular structure in the thermoplastic material using the supercritical fluid; and

forming the entire weather stripping from the thermoplastic material having the microcellular structure.

16. The weather stripping of claim 15, wherein the thermoplastic material comprises thermoplastic vulcanizate.

17. The weather stripping of claim 15, wherein the microcellular structure includes cells having a size less than about 2 microns.

18. The weather stripping of claim 17, wherein the microcellular structure includes cells having a size between about .1 micron and about 1.0 micron.
19. The weather stripping of claim 15, wherein the thermoplastic material has a cell density in the range from about  $10^9$  to about  $10^{15}$  per cubic centimeter.
20. The weather stripping of claim 15, wherein at least one of the body portion or the sealing portion has a cross sectional dimension that selectively varies along a length of the weather stripping.